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Cette recherche constitue la deuxième étape d'une étude longitudinale qui vise l'évaluation du rendement scolaire et des caractéristiques affectives d'élèves provenant de milieux défavorisés (élèves SED) qui fréquentent des écoles de la CEPGM ayant une population hétérogène du point de vue socio-économique. L'étude a été menée en 2e année et en 5e année. Des tests de rendement en anglais et en mathématiques et un inventaire de motivation et d'image de soi ont été administrés à tous les élèves. Les résultats de cette étude nous mènent à conclure que l'influence du milieu dans les écoles de la CEPGM qui sont hétérogènes du point de vue socio-économique n'est pas suffisante pour hausser le rendement scolaire des élèves SED dans ces écoles au-dessous de celui des élèves SED dans les écoles de milieux défavorisés.

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Assessment of the Academic Achievement and Affective Characteristics of Pupils from Socio-Economically Disadvantaged Backgrounds in Non-Inner City Schools

Phase II

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Assessement of the Academic Achievement and Affective Characteristics of Pupils from Socio-Economically Disadvantaged Backgrounds in Non-Inner City Schools Grades 2 and 5

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Résumé

Cette recherche constitue la deuxième étape d'une étude longitudinale qui vise l'évaluation du rendement scolaire et des caractéristiques affectives d'élèves provenant de milieux défavorisés (élèves SED) qui fréquentent des écoles de la C.E.P.G.M. ayant une population hétérogène du point de vue socio-économique. L'étude a été menée en 2ème année et en 5ème année. A chaque niveau on a comparé les élèves SED des écoles de milieu socio-économique hétérogène (groupe SED_3) à: (1) des élèves SED qui fréquentent des écoles de milieu défavorisé du type Inner City (groupe SED_2) et du type Core Inner City (groupe SED_1) et (2) des élèves NON-SED qui étudiaient dans les mêmes classes que les élèves SED. On a aussi comparé les résultats des évaluations de cette année à ceux de l'année précédente quand ces mêmes élèves étaient en 1ère et en 4ème année. De plus, quatre écoles de la Commission Scolaire Lakeshore ont participé à l'évaluation des élèves de 2ème année.

Des tests de rendement en anglais et en mathématiques et un inventaire de motivation et d'image de soi ont été administrés à tous les élèves.

Les résultats de la 2ème année indiquent que: (1) Le groupe SED_3 a obtenu des résultats nettement inférieurs à ceux du groupe SED_2 à un des tests de mathématiques; (2) le groupe SED_3 a aussi obtenu des résultats nettement inférieurs à ceux du groupe NON-SED correspondant à trois tests d'anglais et à un test de mathématiques; (3) il n'y

avait pas d'autres différences significatives entre le groupe SED_3 et les autres groupes; (4) à un des tests d'anglais, la différence entre le groupe SED_3 et le groupe NON-SED correspondant a nettement diminué par comparaison aux résultats de l'année passée; (5) dans les écoles de la Commission Scolaire du Lakeshore, il n'y avait aucune différence significative entre le groupe SED et le groupe NON-SED.

Les résultats de la 5ème année indiquent que: (1) il n'y avait aucune différence significative entre les groupes SED_1, SED_2 et SED_3; (2) le groupe SED_3 a obtenu des résultats nettement inférieurs à ceux du groupe NON-SED correspondant à trois tests d'anglais et à un test de mathématiques; (3) à un des tests de mathématiques, la différence entre le groupe SED_3 et le groupe NON-SED correspondant a nettement ~~diminué~~ augmenté par comparaison aux résultats de l'année précédente.

Les résultats de cette étude nous mènent à conclure que l'influence du milieu dans les écoles de la C.E.P.G.M. qui sont hétérogènes du point de vue socio-économique n'est pas suffisante pour hausser le rendement académique des élèves SED dans ces écoles au-dessus de celui des élèves SED dans les écoles de milieu défavorisé.

Summary

This study constitutes the second phase of a longitudinal evaluation designed to assess the academic achievement and affective characteristics of pupils from socio-economically disadvantaged backgrounds (SED pupils) who attend non-Inner City schools of the Protestant School Board of Greater Montreal. Two grade levels were investigated, grades 2 and 5. At each grade level, the pupils attending non-Inner City schools (SED_3 groups) were compared to: (1) SED pupils in Inner City schools (SED_2 group) and in Core Inner City schools (SED_1 group) and (2) NON-SED pupils studying in the same classes as the SED pupils. Moreover, the results of this year's assessment were compared to those obtained by these pupils the previous year when they were in grades 1 and 4. In addition, four schools of the Lakeshore School Board participated in the grade 2 evaluation.

A battery of English and mathematics tests and a motivation and self-concept inventory were administered to all the pupils.

The main findings for grade 2 were as follows: (1) the SED_3 group scored significantly lower than the SED_2 group on the mathematics concepts test; (2) the SED_3 group also scored significantly lower than the corresponding NON-SED group on four tests; word analysis, reading, spelling and computation; (3) there were no other significant differences between the SED_3 group and the other groups; (4) by comparison to last year's results, the difference between the

SED_3 pupils and their NON-SED peers decreased significantly on the English usage test; (5) between the SED and NON-SED pupils in the schools of the Lakeshore School Board there were no significant differences on any of the tests.

The main findings for grade 5 were as follows: (1) There were no significant differences among the three SED groups on any of the tests; (2) the SED_3 group scored significantly lower than the corresponding NON-SED group on four tests: capitalization, punctuation, usage and concepts; (3) by comparison to last year's results, the difference between the SED_3 pupils and their NON-SED peers increased significantly on the mathematics concepts test.

The findings of this study suggest that the effect of the environment in the P.S.B.G.M.'s non-Inner City Schools is not powerful enough to raise the academic achievement of the SED pupils in these schools above that of SED pupils in Inner City schools.

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This study is part of a longitudinal research which examines the academic achievement and affective characteristics of children from socio-economically disadvantaged backgrounds (SED pupils) in Inner City and non-Inner City Schools of the Protestant School Board of Greater Montreal (P.S.B.G.M.). The difficulties SED pupils experience in school is well known. The problem is particularly acute in Inner City schools since the concentration of disadvantaged children is very high in these schools. In an effort to raise the academic standard in Inner City schools, most Western countries allocate special funds to such schools. These funds are used to provide a variety of enrichment programs, additional teaching materials and/or extra teaching personnel.

Inner City schools are located in neighborhoods in which conditions of poverty prevail (see Depatie, Lefèbvre and Parent, 1974, for criteria which were used to identify such districts in Montreal). On the other hand, not all socio-economically-disadvantaged families live in clearly defined poverty areas. Moreover, in cities like Montreal, which have a large immigrant population, there is a great amount of mobility leading to rapid changes in the ethnic and socio-economic composition of a community. It follows that the student body in the school that serves such a community will also become more heterogeneous with respect to these characteristics. Finally, in places where schools are organized along linguistic and/or religious denominations, pupils must often attend schools outside their own

neighborhood. This is another factor which may bring SED pupils into schools which are not located in neighborhoods in which conditions of poverty prevail. Thus, schools which are not considered Inner City schools (hereafter, non-Inner City Schools) can have quite a substantial proportion of SED pupils.

These SED pupils are not exposed to the special enrichment programs that are provided for their peers in the Inner City schools. It is claimed that non-Inner City schools do not have to offer such programs because the middle-class environment supplies sufficient stimulation to raise the scholastic achievement of the SED pupils in these schools. However, findings from Board-wide testing in the P.S.B.G.M. schools suggest that this hypothesis does not hold true, at least not under the conditions that prevail in most of the P.S.B.G.M. non-Inner City schools.

Another issue that has been raised with respect to SED pupils is the development of affective variables such as motivation and self-image. Here the constant interaction with peers who are so much more privileged may in fact have an adverse effect.

Review of the Literature

Research findings relevant to the issues raised above have been discussed in a previous report (Adiv and Doré, 1985). However, they will be presented here.too, for the benefit of those who have not read that report.

Most of the research pertaining to disadvantaged children in non-Inner City schools has been conducted in the United States. Its purpose was to assess the effect of desegregation on the academic achievement and self-image of black children. Many of the studies report that black pupils in integrated schools scored significantly higher on standardized tests than those who attended segregated schools (Anderson, 1966; Coleman et al., 1966; Stallings, 1959, Sullivan, 1968). Moreover, longitudinal studies show substantial gains in the achievement of blacks in desegregated schools, not only by comparison to previous achievement, but also by comparison to grade equivalent scores (Hansen, 1960; Luneman, 1972; Mayer et al., 1974).

Another issue which was extensively investigated was the relationship between the achievement of black pupils and racial composition of both the school and the classroom. McPartland (1969) found that the academic achievement of blacks was directly related to the percentage of white pupils in the classroom and unrelated to the racial composition of the school. On the other hand, Cohen, Pettigrew and Riley (1972) note that the positive correlation between the black pupils' achievement scores and the racial composition of the classroom was upheld only when the overall proportion of whites in the school was at least 40%.

Comparisons between the achievement of black pupils and that of white pupils have also been carried out. Hansen (1960)

found that the white pupils' scores were always higher than those of the black pupils. However, the gains made by the latter over a five-year period were greater than those attained by the white pupils. Similar results were reported by Stallings (1959). However, both studies must be accepted cautiously because of methodological issues. Bradley and Bradley (1977) note that, in Hansen's study the tests used in the pre- and post-assessments were not the same, while in Stallings' study, there was no control for IQ and socio-economic status.

In conclusion, the studies pertaining to the achievement of black pupils in desegregated schools seem to indicate that these pupils' academic performance benefits from the environment, but that the racial composition of both school and classroom do seem to limit this effect.

With respect to the pupils' self-image, the results are less positive and often contradictory. Bachman (1970) and Powell and Fuller (1970) found that black pupils in desegregated schools had lower self esteem than black pupils in segregated schools. Coleman et al. (1966) reported, moreover, that, as the percentage of white pupils in a school increased, the self-esteem of both white and black pupils in the school decreased. On the other hand, Williams and Byars (1968) as well as Knight, White and Taff (1972) found no differences between the self-esteem of black pupils in segregated schools and that of their peers in the desegregated schools.

In Canada, the research related to the academic achievement of pupils from different ethnic backgrounds has centered predominantly around the development of second language skills. The studies conducted in Montreal are of special interest here as they deal specifically with the integration of ethnic minority pupils into the French medium schools. (Adiv, 1982; Adiv and Doré, 1983, 1984a & b). These studies reveal that the ethnic minority pupils' academic performance, as measured on standardized mathematics tests, does not differ significantly from that of their francophone peers. However, thejr French language skills continue to lag even after a number of years in the French school milieu.

In addition, a large-scale study has recently been conducted in the French medium schools of the Catholic School Commission of Montreal (C.E.C.M.) in order to assess the effect of a special intervention program (Opération Renouveau) on the academic achievement and self-image of pupils in Inner City schools (Houle et al., 1983). Thirty-six schools were included in the study. One third of the schools were Inner City schools participating in the Opération Renouveau program. The others were grouped as either "average" or "above average" with respect to socio-economic level. The results of the study show that, at all the levels tested (grades 1, 2, 3 and 4), there were marked differences among the three groups in academic achievement (French language skills and mathematics) and only very small differences on the measures of the self-image.

Since the study was conducted over a two-year period, the findings suggest that this pattern is quite consistent. The findings pertaining to the pupils' self-image are of particular interest since one would expect low academic achievement to have a more negative effect on pupils' self-image as they get older. It is, of course, possible that these findings are upheld only in settings where the student population is homogeneous with respect to socio-economic background. In fact, the study does not examine the questions that have been raised above with regard to SED pupils in non-inner City schools. They may not be an issue for a school board like the C.E.C.M. where pupils, for the most part, are able to attend neighborhood schools. It is, however, a matter of concern for the Protestant School Board of Greater Montreal (P.S.B.G.M.) where most schools serve pupils from widely spread geographical areas.

The Study

In order to assess the academic achievement and affective characteristics of SED pupils in schools where the student population is heterogeneous with respect to socio-economic background, the P.S.B.G.M. has initiated a longitudinal research in its English medium schools. The precise questions that the study addresses are as follows:

(1) Do SED pupils who attend schools which are socio-economically

heterogeneous reach higher levels of academic achievement than SED pupils who attend Inner City schools?

(2) Does the self-image of SED pupils in socio-economically heterogeneous schools differ from that of SED pupils in Inner City schools?

(3) Do SED pupils who attend socio-economically heterogeneous classes reach the same level of academic achievement as the non-SED pupils who attend the same classes?

(4) Does the self-image of SED pupils in socio-economically heterogeneous classes differ from that of the non-SED pupils who attend the same classes?

(5) Does the proportion of SED pupils in the socio-economically heterogeneous classes affect the academic achievement and self-image of these pupils?

(6) Do SED pupils in socio-economically heterogeneous schools follow the same progression from one year to the next by comparison to (a) non-SED pupils in the same classes and (b) SED pupils in Inner City schools?

The Schools

Nine P.S.B.G.M. schools participated in the first phase of the research (1984-1985). According to the norms established by the School Council of the Island of Montreal, three of the schools were core Inner City schools, three were Inner City schools (but not core) and three were non-Inner City schools. The core Inner City schools have the heaviest overall concentration of SED pupils and the bulk of the funding allotted to Inner schools is, therefore, given to these schools. In contrast, Inner City schools receive only a small proportion (15%) of the total Inner City budget, in spite of the fact that the number of SED pupils in these schools is quite significant. In consequence, the scope of the intervention programs and special projects, which are offered in the latter schools, is quite limited. It should be noted that the variety of programs as well as their intensity are adapted, in-as-far as possible, to the needs of each school; hence, there is a certain amount of variability not only between core Inner City and Inner City schools, but also within each of these groups. This factor is particularly salient with regard to the pre-kindergarten classes. The distribution of the pre-kindergarten classes in the schools which participated in the first phase of this study was as follows:

(1) In the core Inner City schools, two of the three schools had a half-day pre-kindergarten program and one school had a full-day pre-kindergarten program.

(2) In the Inner City schools, two of the schools had a half-day pre-kindergarten program and the third school had no pre-kindergarten program at all.

In addition to the pre-kindergarten programs, all of the core Inner City schools and all of the Inner City schools had nutrition programs, extra educational materials, teacher aides, subsidized field trips, cultural enrichment programs and special teacher/parent initiated projects. All of these programs were much more extensive in the core Inner City schools than in the Inner City schools.

The non-Inner City schools did not have any of these programs, except for a half-day pre-kindergarten program in one of the schools and the latter was not supported by Inner City funds.

Summary of Findings from the 1984-1985 Study

The 1984-1985 study was conducted in grades 1 and 4. At each grade level, the SED pupils in the non-Inner City schools (SED_3) were compared to the SED pupils in the Inner City schools (SED_2) and to those in the core Inner City schools (SED_1). Each of the three groups was also compared to a group of NON-SED pupils who studied in the same classes as the corresponding SED group ($NON\text{-}SED_3$, $NON\text{-}SED_2$ and $NON\text{-}SED_1$).

A battery of English and mathematics tests and a motivation and self-concept inventory were administered to all the pupils.

The main findings were as follows: On the English and mathematics tests, there were no significant differences among the three SED groups at either grade level.

In contrast, the three SED groups scored lower than the corresponding NON-SED groups on a number of variables. In Grade 1, significant differences were noted on three English tests: word analysis, reading and usage. Moreover, the SED_1 group differed significantly from the $NON\text{-}SED_1$ group on the problem solving test. In terms of grade equivalents, the NON-SED groups performed within a two to three months range of the expected grade level. On the other hand, the SED groups performed three to six months below grade level except in computation where all the groups scored at or above grade level.

In grade 4, the differences between the SED and NON-SED pupils were most pronounced in the non-Inner City schools. Here, the SED_3 group scored significantly lower than the $NON\text{-}SED_3$ group on all the English and mathematics tests except vocabulary and mathematical concepts. Differences between the SED_1 and $NON\text{-}SED_1$ groups were significant on three English language tests (capitalization, punctation and usage) and on the three mathematics tests. The SED_2

group differed significantly from the NON-SED_2 group on only two tests: capitalization and problem solving. In terms of grade equivalents, the SED groups again performed three to six months below grade level except in computation. In some instances, the SED_3 group scored as much as seven to ten months below grade level.

The findings lead to the conclusion that, with respect to academic achievement, the SED pupils in the non-Inner City schools do not differ significantly from SED pupils in Inner City schools (core and non-core). Moreover, in grade 1 differences between SED and NON-SED pupils in non-Inner City schools are similar to those between SED and NON-SED pupils in Inner City schools (core and non-core). However, in grade 4, the differences between the SED and NON-SED pupils are more pronounced in the non-Inner City schools than in the Inner City schools (core and non-core). The pattern that emerges suggests that, academically, SED pupils in non-Inner City schools may fall further behind their NON-SED peers as they advance through the grades. However, such a hypothesis must await support from longitudinal data.

With regard to the motivation and self-concept inventories, there were no significant differences among the three SED groups in grade 1. However, differences emerged in grade 4, where the SED_1 group scored higher than the other two SED groups on the self-concept component. The comparison between the SED pupils and their NON-SED peers showed few significant differences between these groups and

none of them pertained to the affective characteristics of the pupils in the non-Inner City schools. Thus, the contact with middle class peers does not seem to have a negative effect on the pupils' self-image, at least, not at the grade levels that were investigated here. As in the case of academic achievement, these pupils must be followed over a number of years in order to assess whether these characteristics do not undergo developmental changes.

The findings related to the possible effect of the proportion of SED pupils in the classroom were inconsistent. In particular, it was noted that classes in core Inner City Schools obtained weak reading scores even when the percentage of SED pupils in these classes was relatively low (less than 55%). Thus, the proportion of SED pupils in the classroom may be less of an influencing factor than the overall proportion of SED pupils in the school; at least in schools with a very high concentration of SED pupils.

The 1985 - 1986 Study

The present study constitutes the second phase of the research. It was conducted in the same nine schools that had participated in the first study. This time grades 2 and 5 were tested so as to provide a follow-up on the students who had been in grades 1 and 4 last year.

In addition to these nine P.S.B.G.M. Schools, four schools from the Lakeshore School Board joined the project. All of these

schools were non-Inner City schools. Moreover, the majority of their pupils (87% of those included in this sample) were NON-SED pupils. The question arises whether this factor has a positive effect on the academic achievement and affective characteristics of the SED pupils in these schools. Thus, the inclusion of the schools from the Lakeshore School Board provides an excellent opportunity to examine the effect of the environment under conditions where the proportion of SED pupils is much lower than in the P.S.B.G.M.'s non-Inner City schools.

The Subjects

Seven hundred thirteen pupils participated in this study. Five hundred of them attended P.S.B.G.M. schools and the others attended schools of the Lakeshore School Board. Two hundred forty-six of the pupils in the P.S.B.G.M. schools and all the pupils from the Lakeshore School Board were in grade 2. The remaining two hundred fifty-four pupils in the P.S.B.G.M. schools were in grade 5. For exact sample sizes according to school type (core Inner, Inner and non-Inner schools), see Tables 1A and 15A.

Four hundred of the pupils in the P.S.B.G.M. schools had participated in last year's study and the remaining one hundred were mostly pupils who had attended other schools during the 1984-1985 school year. A small number were pupils who had been in the same schools but had to repeat a year (approximately 5% of the total

sample at each grade level). The identification of the SED pupils within that part of the sample which had not participated in last year's evaluation was again done in conjunction with each individual school and was based on the same criteria used the previous evaluation.

In the P.S.B.G.M. schools the classes at each grade level were grouped as in the 1985 study, i.e., once according to school profile (core Inner City schools, Inner City schools and non-Inner City schools) and once according to the proportion of SED pupils in each class irrespective of school profile (SED concentration). The following criteria were used for the latter classification: (1) 80% - 100% SED pupils per class; (2) 55% - 79% SED pupils per class and (3) less than 55% SED pupils per class.

In all, there were three groups of SED pupils and three groups of NON-SED pupils in each type of classification. These groups will be identified, hereafter, as follows:

(1) Classification according to profile.

SED_1 = SED pupils in core Inner City schools

SED_2 = SED pupils in Inner City schools

SED_3 = SED pupils in non-Inner City schools

$NON\text{-}SED_1$ = NON-SED pupils in core Inner City schools

$NON\text{-}SED_2$ = NON-SED pupils in Inner City schools

$NON\text{-}SED_3$ = NON-SED pupils in non-Inner City schools

(2) Classification according to SED concentration within each class.

SED_1 = SED pupils in classes with 80% - 100% SED pupils

SED_2 = SED pupils in classes with 55% - 79% SED pupils

SED_3 = SED pupils in classes with less than 55% SED pupils

$NON\text{-}SED_1$ = NON-SED pupils in classes with 80% - 100% SED pupils

$NON\text{-}SED_2$ = NON-SED pupils in classes with 55% - 79% SED pupils

$NON\text{-}SED_3$ = NON-SED pupils in classes with less than 55% SED pupils

Since all the schools from the Lakeshore School Board were non-Inner City schools with a low concentration of SED pupils, the above classifications did not apply to them. Hence, the pupils from the four schools were simply grouped according to the SED/NON-SED distinction.

The groupings according to profile and concentration reveal some interesting information regarding the distribution of SED pupils across the P.S.B.G.M. schools. First, only one core Inner City school had a very high concentration of SED pupils (over 80%) in all the classes tested (grades 2 and 5). Second, only one of the non-Inner City schools had a relatively low concentration of SED pupils (below 35%) in all the classes tested (grades 2 and 5). Third, within the total sample, there was a higher concentration of SED pupils in grade 2 than in grade 5 (for further details, see Tables 1B and 15B). It is of interest to note that all of these characteristics are similar to those noted in last year's study, although overall,

the difference in SED concentration between grades 2 and 5 is less pronounced than it had been between grades 1 and 4. This change is due primarily to a drop in the proportion of SED pupils from grade 1 (58%) to grade 2 (48%). Thus, it would seem that among the new pupils that joined the non-Inner City schools there were proportionally more NON-SED than SED pupils at the grade 2 level.

In addition to socio-economic status, ethnic background and mother tongue were also considered as possible influencing factors on the pupils' academic achievement and self-image. In particular, it was felt that English language skills might be affected if children spoke a language other than English in the home. The data shows that only 11% of the pupils in the core Inner City schools (in both grade 2 and grade 5) did not speak English as their mother tongue. This proportion rose to 38% in the Inner City schools (33% in grade 2 and 42% in grade 5) and reached 37% in the non-Inner City schools (27% in grade 2 and 42% in grade 5). Thus, the core Inner City schools had significantly more native English speakers in their classes than the other two types of schools. Moreover, the non-native English speakers were not evenly distributed across the schools. In two of the schools, all the pupils in the grades included in the study were native English speakers. On the other hand, there was one school in which only 16% of the pupils in these grades spoke English as their mother tongue and 84% were non-native English speakers.

This extreme diversity in the linguistic and cultural background of the student population in our sample is a characteristic of the P.S.B.G.M. schools in general and it was, therefore, impossible to hold the mother tongue factor constant across the three groups of schools. It should, however, be noted that the proportion of native and non-native English speakers was, in most cases, fairly evenly divided between the SED and NON-SED pupils in each class.

In the schools of the Lakeshore School Board, practically all of the pupils were native English speakers. However, six percent of them spoke a second language in addition to English at home. All of these pupils belonged to the NON-SED group.

The Instruments

Three types of instruments were used at each of the two grade levels: (1) a battery of achievement tests to assess English language and mathematics skills; (2) a self-concept and motivation inventory and (3) a test of non-verbal ability. Each test is briefly described below.

(1) The English Language and Mathematics Tests.

The Canadian Tests of Basic Skills (CTBS , Nelson 1981) were used to assess English language and mathematics skills. Level 8 of the primary battery was used in grade 2 and level 11 of the multi-level edition (metric version) was used in grade 5.

A. The Grade 2 Tests

A special feature of the grade 2 tests is that the stimulus items on several of the tests are read out aloud. This provision minimizes the influence of the learner's reading skills on the test results. The following tests were administered: vocabulary, word analysis, reading, spelling, usage, mathematics concepts, mathematics problems and mathematics computation. All the items on these tests are multiple-choice items. Each test is briefly described below.

The vocabulary test. This test consists of two parts: On the first part (17 items), the pupils are shown a picture and four words. They have to select the picture that best describes that picture. In the second part (13 items), the students have to select from among three (and sometimes four) words the one that best completes each of the fragmentary statements that they are given to read.

The word analysis test. On this test, the tester reads a word and the pupils have to identify a corresponding word on their answer sheets on basis of initial, medial or final sounds. Silent letters, long and short vowels and glides are included. There are 50 such items. An additional seven stimulus items are presented in written form. Here, the pupils have to add suffixes or make compound words.

The reading test. Among the tests administered in grade 2, the reading test was the only one which required extensive reading. The test is divided into three subtests. In the first subtest (23 items), the pupils are shown pictures and have to complete written statements pertaining to what they see. In the second subtest (16 items), the pupils have to answer yes/no questions, to written questions without pictorial support. In the third subtest, the pupils have to read four short stories (80-150 words) and answer questions (28 in all). Except for the initial instructions on each subtest, the tester does not read out any part of this test.

The spelling test. The spelling test consists of 29 items. For each item, the tester reads out the three words shown on the pupils' answer sheets and then reads a sentence which contains those words. The pupils have to identify the word (amongst the three) that is misspelled.

The usage test. On this test, the pupils are given three sentences, two grammatically incorrect ones and one correct one. The tester reads the sentences aloud and the pupils have to identify the correct one. In all, there are 23 items on this test.

The mathematics concepts test. This test consists of 36 items. It contains geometrical figures, numerical configurations, concepts relating to the identification of money (coins) and time (half-hour), and correspondences between graphically represented measurements and arithmetic operations (additional, subtraction, multiplication and division).

The mathematics problems test. This test contains twenty-four story problems. Seventeen of the problems are read out aloud by the teacher. The others are presented in written form.

The mathematics computation test. There are 29 computation exercises on this test. All the computations involve either addition or subtraction. Twelve of the stimulus items are presented orally and only the multiple choice answers are shown in written form. For the remaining 16 stimulus items, both the stimulus item and the responses are presented in written form.

B. The Grade 5 Tests

The grade 5 tests of the CTBS battery follow basically the same pattern as those used in grade 2. However, at this grade level, the stimulus items are not given orally except in the case of spelling. Moreover, there is no word analysis test for this grade.

The following six English language tests were administered in

grade 5: vocabulary, reading, spelling, capitalization, punctuation and usage. In mathematics, the following three tests were given: concepts, problem solving and computation. It should be noted that the reading test contains only full texts which vary in length from approximately 145 to 450 words. Each text is again followed by several questions with multiple choice answers.

(2) The Self-Concept and Motivation Inventory (SCAMIN)

This inventory developed by Milchus, Farran and Reitz (1968) provides a profile of how a pupil perceives his or her role as a learner and his or her expressed need to achieve in school. The inventory consists of a number of statements (24 for grades 1-3 and 48 for grades 4-6) to which the pupils have to respond by indicating on a scale from 1-5 how happy each statement would make them. The scale itself is given to the pupils in the form of five different faces going from very happy to very sad. The pupils' responses are grouped into four categories: role expectancy, self-adequacy, achievement needs and achievement investment. The first two categories make up the self-concept profile and the last two categories indicate the motivation profile. It should be noted that the self-concept profile refers to a pupil's self-concept in relation to school (academic self-concept). It gives an indication as to how the pupil accepts the expectations others have of him (role expectation) and how he or she views his or her chances of success.

(3) The Non-Verbal Ability Test

The test used for the assessment of non-verbal ability was Raven's Progressive Matrices test. This test is designed to assess a person's ability to "observe and think clearly" (Raven, 1965, p. 3). The test contains several sections. Each section contains a number of pattern completion tasks which increase progressively in a complexity. Two versions of the test are available: a colored version for the elementary grades and a standard version for older children and adults. Since the test does not require language skills, it is particularly suitable in situations where the language of instruction may not be the mother tongue of all the children. It is with this issue in mind that the test was used in the present study (colored version in grade 2 and standard version, sections A, B, C and D, in grade 5).

Procedures

In every school included in the sample, all the grade 2 classes (P.S.B.G.M. and Lakeshore School Board) and all the grade 5 classes (P.S.B.G.M. only) were given the full battery of tests. In order to disturb classroom routines as little as possible, the tests were administered to all the pupils in a given class. However, the test results of pupils with severe learning disabilities and those of non-native English speakers who had been in the country for less than two years were excluded from the data analysis.

The tests were administered in May 1986 except for the grade 5

CTBS which were administered in February of that same year. All the tests were given by native English speakers who were especially trained for the specific tasks they had to perform.

Procedures for the Analysis of the Data

The results of the P.S.B.G.M. schools were analysed once according to school profile (core Inner City, Inner City and non-Inner City) and once according to SED concentration (80% - 100%, 55% - 79% and less than 55% SED pupils in the class).

For the analysis according to school profile, a 2 X 3 factorial design was used. School profile and SED versus NON-SED were the independent variables. Separate analyses were carried out for each test and at each grade level. Wherever significant main effects were noted, a one-way analysis of variance and a Newman Keuls procedure of multiple comparisons were used to determine which groups differed significantly from one another.

In the case of the analysis according to SED concentration, the number of pupils in some of the groups, particularly the number of NON-SED pupils in the 80% - 100% SED concentration, was so small that the 2 X 3 factorial design could not be applied. On consequence, only the one-way analysis of variance and the Newman Keuls procedures were used here.

In addition, a third set of comparisons was carried out in order to see whether there were significant changes between the outcomes of

last year's study and those of this year's study. For this analysis, only the test scores of pupils who had participated in both evaluations were retained. Moreover, the comparison was carried out only according to school profile, since the SED concentration at the classroom level changes when pupils are re-grouped the following year and/or if new pupils join the class. Finally, since the number of test items on the CTBS differs at each grade level, the raw scores were calculated in percentages and an arcsine transformation was used for the statistical analysis. Tests which were not administered both years were excluded. Two separate two-way analyses were carried out. The independent variables were school profile, SED versus NON-SED grouping and year (1985 versus 1986). Here, again, significant main effects and interactions were analyzed further using the one-way analysis of variance and Newman Keuls procedures.

The results of the schools from the Lakeshore School Board were analyzed using a one-way analysis of variance. The independent variables were SED group and NON-SED group.

In order to minimize the effect of possible differences in mental capacity between the groups on the results of the various academic tests, the scores of the Progressive Matrices tests were analyzed first. Wherever significant differences between the groups emerged from this analysis, the Progressive Matrices scores were used

as a covariate in the analysis of the results obtained from the other tests (for a brief description of this procedure, see Appendix I).

In addition, the raw scores from the CTBS and from the SCAMIN were transformed into grade equivalents and stanine scores respectively (see Appendix II and Appendix III for descriptions). Norm-based comparisons were then carried out between the six groups at each grade level.

Results
P.S.B.G.M. Schools
Grade 2

Results of the Analysis According to School Profile

The results from the analysis of the Raven Matrices test scores disclose significant differences among the groups ($F = 4.90$; $df = 5, 240$; $p < .001$). In consequence, a covariance procedure was used in the subsequent analyses of the grade 2 test scores. The results of these analyses are shown in Tables 2-6. It should be noted that the group means displayed in these tables are means which have been adjusted according to the covariance procedure.

The two-way analyses show a significant main effect for the SED vs. NON-SED comparison on all the English language tests and on the computation test in mathematics. Among the three types of schools, there was a main effect for two English tests (spelling and usage)

and for the concepts test in mathematics. On the other hand, there were no significant main effects on any of the test results pertaining to the measurement of the affective characteristics (motivation and self-concept). Moreover, there were no significant interactions between the two independent variables (school profile and SED/NON-SED grouping) on any of the tests (for the numerical values of the relevant F ratios, see Table 2).

Further analysis of the main effects according to school profile indicates that the SED_2 group (Inner City schools) scored significantly higher than the SED_1 group (core-Inner City schools) on the English usage test (SED_1, $\bar{x}$ = 10.21; SED_2, $\bar{x}$ = 12.62; SED_3, $\bar{x}$ = 11.75). The SED_2 group also scored significantly higher than both the SED_1 group and the SED_3 group (non-Inner City schools) on the mathematics concept test (SED_1, $\bar{x}$ = 16.90; SED_2, $\bar{x}$ = 20.30; SED_3, $\bar{x}$ = 18.09).

It is noteworthy that, numerically, the SED_2 group scored consistently higher than the other two groups on the English language and mathematics tests. On the other hand, on the motivation and self-concept scales, the means of the three groups were practically the same (for the means obtained by the three groups on the various tests, see Table 3).

The comparison between the SED groups and the NON-SED groups within each type of school reveals that the latter practically always scored numerically higher than the former on the English language and

mathematics tests. In the core Inner City schools, the difference between the two groups was significant in the case of the vocabulary test (SED_1, $\bar{x}$ = 11.63; $NON\text{-}SED_1$, $\bar{x}$ = 16.72) and the usage test (SED_1, $\bar{x}$ = 10.27; $NON\text{-}SED_1$, $\bar{x}$ = 13.40). In the Inner City schools, the difference was significant on the word analysis test (SED_2, $\bar{x}$ = 26.70; $NON\text{-}SED_2$, $\bar{x}$ = 31.53) and on the spelling test (SED_2, $\bar{x}$ = 19.47; $NON\text{-}SED_2$, $\bar{x}$ = 22.27). In the non-Inner City schools, the difference was significant on the word analysis test (SED_3, $\bar{x}$ = 25.24; $NON\text{-}SED_3$, $\bar{x}$ = 29.05), on the reading test (SED_3, $\bar{x}$ = 34.90; $NON\text{-}SED_3$, $\bar{x}$ = 40.91, on the spelling test (SED_3, $\bar{x}$ = 17.15; $NON\text{-}SED_3$, $\bar{x}$ = 20.61) and on the mathematics computation test (SED_3, $\bar{x}$ = 19.61, $NON\text{-}SED_3$, $\bar{x}$ = 21.84). Interestingly, there were practically no differences between the SED and NON-SED groups on the problem solving test. Similarly, here again the differences in the scores on the SCAMIN (self-concept and motivation) were minimal. See Tables 4, 5 and 6 for the means obtained by the various groups on the tests where the differences were not significant.

The grade equivalent scores indicate the same pattern as the one noted in the analysis of the raw scores. However, the differences between the groups tend to be more pronounced since the effect of the between-group differences in verbal capacity have not been held steady here (for details, see Table 7).

According to the standardized norms for the CTBS, the grade 2 pupils should have been at a grade level of about 28-29 since they were tested in May. The results suggest that the three NON-SED groups scored within a two to three months range of this level, except in mathematics computation where they scored six to eight months above grade level. The three SED groups' performance was generally weaker and ranged in some instances (word analysis in the case of the SED_1 and SED_3 groups and usage in the case of the SED_1 group) up to one year below grade level. A comparison between the grade equivalent scores of the English language tests and those of the mathematics tests also shows that the three SED groups were considerably weaker in English than in mathematics. As in the case of the NON-SED groups, the SED groups' strongest subject was mathematics computation and here they all scored well above grade level.

The norms for the SCAMIN are given in stanine points. Moreover, since these norms are indicated separately for each of the four categories which make up the inventory, the raw scores obtained on the SCAMIN in the present study have been transformed according to the same four categories. The results show that the groups differed by no more than one stanine point and that all the groups ranked within the average range of the stanine scale (see Table 8).

Results of the Analysis According to SED Concentration

Here again, the scores of the Progressive Matrices test were analyzed first. The results are similar to those noted for school profile ($F = 4.69$; $df = 5, 240$; $p < .001$). In consequence, the covariance procedure was used here, too, in all the subsequent analyses.

The results of these analyses indicate that the SED_1 group (80% - 100% SED concentration) scored significantly lower than the SED_2 group (55% - 79% SED concentration) and the SED_3 group (below 55% SED concentration) on the word analysis test (SED_1, $\bar{x} = 10.90$; SED_2, $\bar{x} = 14.06$; SED_3, $\bar{x} = 13.25$). The SED_1 group also scored significantly lower than the SED_2 and SED_3 groups on the mathematics concept test (SED_1, $\bar{x} = 17.26$; SED_2, $\bar{x} = 19.39$; SED_3, $\bar{x} = 19.43$)

It should be noted that, numerically, the SED_1 group scored consistently lower than the SED_2 and SED_3 groups on the English language and mathematics tests. In contrast, they scored higher than the latter two groups on the motivation inventory. The difference was, however, only significant between the SED_1 group and the SED_3 group. On the self-concept inventory, there were no significant differences (see Table 9 for the numerical values of the scores, all of which are adjusted scores using the Progressive Matrices scores as covariate).

The comparison of the SED and NON-SED pupils grouped according to concentration shows the same pattern as the comparison according to school profile, i.e., the three SED groups scored generally lower than the corresponding NON-SED groups on the English language and

mathematics tests (see Tables 10, 11 and 12). However, very few of these differences were statistically significant. Thus, the SED_1 group differed significantly from the $NON\text{-}SED_1$ group only on the vocabulary test (SED_1, $\bar{x}$ = 10.88; $NON\text{-}SED_1$, $\bar{x}$ = 14.80). The SED_2 group differed significantly from the $NON\text{-}SED_2$ group only on the mathematics computation test (SED_2, $\bar{x}$ = 20.94; $NON\text{-}SED_2$, $\bar{x}$ = 23.03). Between SED_3 and $NON\text{-}SED_3$ groups none of the differences were significant. Similarly, there were no significant differences between the three SED groups and the corresponding NON-SED groups on any of the measures pertaining to the SCAMIN.

The grade equivalent scores reveal that here, too, the SED pupils reached generally lower levels than the NON-SED pupils and, except in the case of the $NON\text{-}SED_3$ group, all the groups performed 2-8 months below grade level on most of the English language tests. On the other hand, performance on the mathematics tests was noticeably higher, particularly on the computation test where all the groups performed two to seven months above grade level (for the grade equivalent means of each group, see Table 13).

The stanine scores on the SCAMIN are very similar to those noted in the "by profile" analysis and all the groups ranked again within the average range of the stanine scale (see Table 14).

Grade 5

Results of the Analysis According to School Profile

The analysis of the Raven Matrices test scores of the grade 5 pupils revealed no significant differences among the groups. Hence, a simple analysis of variance procedure was used here to compare the results obtained on all the other tests. The outcomes of this analysis reveal a significant main affect for the SED vs. NON-SED comparison on all the English and mathematics tests. Among the three types of schools, there was a main effect on all the English tests except vocabulary and on the mathematics computation test. On the other hand, as in grade 2, there were no main effects on the test scores pertaining to the measurement of the affective characteristics. Between the two independent variables (school profile and SED/NON-SED grouping) there was a significant interaction on the capitalization test. None of the other interactions were significant (see Table 16 for exact F ratios).

Further analysis of the main effects pertaining to school profile discloses that these main effects were the result of the distribution of the combined scores of the SED and NON-SED groups in each type of school and did not necessarily apply to differences between the test scores of the three SED groups when the latter were considered on their own. In fact, the SED_1, SED_2 and SED_3 groups did

not differ significantly from one another on any of the English language and mathematics tests (see Table 17 for the numerical values of the means obtained by each group on the various tests).

The comparison of the SED and NON-SED groups in each type of school indicates that the scores of the SED_1 and SED_3 groups were consistently lower than those of the corresponding NON-SED groups (see Tables 18 and 20). In the core Inner City schools, these differences were significant for reading (SED_1, $\bar{x}$ = 24.49; $NON\text{-}SED_1$, $\bar{x}$ = 27.06), capitalization (SED_1, $\bar{x}$ = 14.80; $NON\text{-}SED_1$, $\bar{x}$ = 18.77, usage (SED_1, $\bar{x}$ = 14.09; $NON\text{-}SED_1$, $\bar{x}$ = 17.35), mathematics concepts (SED_1, $\bar{x}$ = 18.10; $NON\text{-}SED_1$, $\bar{x}$ = 21.89) and computation (SED_1, $\bar{x}$ = 27.46; $NON\text{-}SED_1$, $\bar{x}$ = 31.95). In the non-Inner City schools, the differences were again significant for capitalization (SED_3, $\bar{x}$ = 16.86; $NON\text{-}SED_3$, $\bar{x}$ = 19.73), usage (SED_3, $\bar{x}$ = 16.24; $NON\text{-}SED_3$, $\bar{x}$ = 19.00) and mathematics concepts (SED_3, $\bar{x}$ = 19.42; $NON\text{-}SED_3$, $\bar{x}$ = 22.84) but not for reading and mathematics computation. On the other hand, the SED_3 group also scored significantly lower than the $NON\text{-}SED_3$ group on the punctuation test (SED_3, $\bar{x}$ = 14.93; $NON\text{-}SED_3$, $\bar{x}$ = 17.87). In contrast, in the Inner City schools, the scores of the SED pupils did not differ significantly from those of their NON-SED peers on any of the tests (for exact group means, see Table 19).

The grade equivalent scores reveal a pattern similar to the one noted in the analysis of the raw scores, i.e., the SED pupils in the

core Inner City schools and in the non-Inner City schools performed at a lower level than their NON-SED peers whereas the SED pupils in the Inner City schools performed at about the same level as the NON-SED pupils in the same classes (see Table 21).

In terms of standarized norms, the NON-SED pupils in the core-Inner City schools and in the non-Inner City schools performed at or above grade level on most of the tests, whereas the three SED groups as well as the NON-SED group in the Inner City schools performed three to ten months below grade level. In case of the SED_1 group, the deficit was even greater for capitalization and usage. Only on the computation test, was the performance of these four groups within close range of the expected grade level.

The stanine scores on the SCAMIN show little variation between the SED and corresponding NON-SED groups. Moreover, the scores of all the groups ranked within the average range of the stanine scale except for the $NON\text{-}SED_1$ group which ranked one step above average on the goals and achievement category (see Table 22).

Results of the Analysis According to SED Concentration

The analysis of the grade 5 results grouped according to SED concentration shows, once again, no significant difference among the six groups on the Progressive Matrices test. Hence, here too, a simple analysis of variance procedure was used to analyze the

results obtained on the other tests.

The comparison of the SED_1, SED_2 and SED_3 groups shows the same absence of significant differences on the English language and mathematics tests as the "by profile" analysis (see Table 23 for details). On the measures pertaining to the SCAMIN, there were numerically greater differences among the SED_1, SED_2 and SED_3 groups here than there were according to the "by profile" analysis. On both of these measures the SED_2 group obtained the lowest scores; statistically, the difference was, however, only significant between the SED_2 group ($\bar{x}$ = 76.70) and the SED_3 group ($\bar{x}$ = 83.95).

The results of the analysis pertaining to the comparison of the SED and NON-SED groups in each concentration category reveal that the differences between these two groups were most pronounced in those classes where the proportion of SED pupils was below 55%. Here, the SED pupils scored significantly lower than their NON-SED peers on all the English language and mathematics tests except on the reading test and even on the latter test the SED_3 group's scores were noticeably lower than those of the NON-SED_3 group (for details, see Table 26). In contrast, the SED_1 group (80% - 100% SED concentration) differed significantly from the NON-SED_1 group on only two tests: mathematical concepts and computation (see Table 24). Between the SED_2 and NON-SED_2 groups (55% - 79% concentration) there were no significant differences

at all (see Table 25). With respect to the affective characteristics, none of the three SED groups differed significantly from the corresponding NON-SED groups.

The comparison of the grade equivalent scores obtained by the different SED and NON-SED groups shows a pattern that differs slightly from the one noted in the "school profile" grouping (see Table 27). First of all, the SED_1 pupils performed at a slightly higher grade level when they were grouped according to SED concentration than when they were grouped according to school profile. Second, differences between the SED_2 and $NON\text{-}SED_2$ pupils were more pronounced when they were grouped according to SED concentration. Finally, both SED_3 and $NON\text{-}SED_3$ pupils tended to perform at a slightly lower grade level when they were grouped according to SED concentration.

The stanine scores on the SCAMIN inventory indicate that the SED_1 and SED_2 groups scored one point higher here than in the "by profile" classification on goal and achievement needs. On the other hand, the SED_1 group scored one point lower here by comparison to the "by profile" classification on the two self-concept measures. The SED_2 group also scored one point lower on one measure, namely, achievement investment. The most noticeable difference to emerge from the comparison between the "by profile" and "by concentration" groupings (compare Tables 22 and 28) is the difference between the stanine

scores of the SED_2 group on the self-adequacy measure (by profile = 5 stanine points, by concentration = 3 points. In consequence, this is the only instance where a stanine score on the SCAMIN dipped below the average range of the stanine scale.

Comparison of the 1985 and 1986 Results

The analysis described in this section was undertaken in order to assess whether the performance of any of the SED groups had changed over the course of the year (1985 to 1986) by comparison to the other two SED groups and by comparison to the corresponding NON-SED groups. For this purpose, three independent variables were considered: school profile, SED versus NON-SED grouping and year i.e., 1985 versus 1986. The latter factor was, however, only considered in terms of its interaction with the other two variables. Moreover, the analysis pertains only to the test results of those pupils who had participated in the 1985 as well as in the 1986 evaluation (for exact sample sizes, see Table 29).

Grades 1 and 2

Since there had been significant differences among the six groups on the Raven Matrices test both in grade 1 and in grade 2, a covariance procedure was used for all the analyses pertaining to these two grades. The results of these analyses show no significant main effects for school profile. However, on one of the tests,

mathematical concepts, there is a significant interaction between school profile and year ($F = 7.20$, $p < .01$). Further analysis reveals that, whereas the three SED groups did not differ significantly from one another on this test in grade 1, they did so in grade 2. A comparison of the means at this grade level discloses that, here, the SED_2 group differed significantly from the SED_1 and SED_2 groups and there was no difference between the latter two groups (for numerical values of all the means, see Table 30).

The comparison of the SED and NON-SED pupils in the core Inner City schools indicates a main effect for the SED/NON-SED grouping on the reading test ($F = 8.57$; $p < .01$), the usage test ($F = 6.87$, $p < .05$) and the problem solving test ($F = 6.38$ $p < .05$). Moreover, there was a marginally significant interaction between group and year on the word analysis test ($F = 3.98$, $p < .057$). Thus, the SED_1 group continued to be significantly weaker than the $NON\text{-}SED_1$ group in reading, English usage and problem solving. On the other hand, the performance of the SED_1 group on the word analysis test was considerably closer to that of the $NON\text{-}SED_1$ group in grade 2 than in grade 1.

In the Inner City schools, there was a significant effect for group (SED_2 versus $NON\text{-}SED_2$) on the usage test ($F = 4.69$, $p < .05$) and on the motivation inventory ($F = 6.44$, $p < .05$). Furthermore, there were significant interactions between group and year on the reading

test ($F = 5.11$, $p < .05$) and on the problem solving test ($F = 4.90$, $p < .05$). Thus, here, the difference between the SED and NON-SED groups was maintained on the usage test and on the motivation inventory, whereas the differences on the reading and problem solving tests differed across grades. Additional analysis show that on the latter two tests, the between-group differences diminished over the course of the year.

Finally, in the non-Inner City schools, there was a main effect for word analysis ($F = 4.54$, $p < .05$) and reading ($F = 6.32$, $p < .05$) and a marginally significant interaction on the usage test ($F = 3.82$, $p < .06$). The follow-up analyses indicate that, on this test, there was again a significant difference between the SED group and the NON-SED group in grade 1 which disappeared in grade 2.

Grades 4 and 5

Since the SED and NON-SED groups did not differ significantly from one another on the Progressive Matrices test in either grade 4 or grade 5, the covariance procedure was not used here in the analysis of the test scores of the CTBS and the SCAMIN.

The results pertaining to the comparison of the three SED groups disclose two significant interactions between school profile and year, one on the reading test ($F = 7.55$, $p < .001$) and one on the punctation test ($F = 3.67$, $p < .05$). Further analyses show that on these

two tests, the performance of the SED_3 group changed considerably from grade 4 to grade 5, whereas no such change was noted for the SED_1 and SED_2 group. Moreover, there was a main effect for school profile on the self-concept inventory ($F = 5.10$, $p < .01$). Here, the SED_1 group continued to display a higher score than the SED_2 group across the two grades.

The comparison between the SED pupils and their NON-SED peers reveals that, in the core Inner City schools, there was a main effect for group on the usage test ($F = 5.55$, $p < .05$) and on the computation test ($F = 12.63$, $p < .001$). Thus, on both of these tests the performance of the SED_1 group remained significantly lower than that of the $NON\text{-}SED_1$ group. However, there were also two significant interactions, one on the mathematics concepts test ($F = 4.15$, $p < .05$) and one on the problem solving test ($F = 5.28$, $p < .05$). Additional analyses show that in both cases, there were significant differences here in grade 4, but not in grade 5 (for the numerical values of the means, see Table 31).

In the Inner City schools, there was no main effect for group There were, however, two significant interactions between group and year, one on the capitalization test ($F = 5.76$, $p < .05$) and one on the problem solving test ($F = 4.97$, $p < .05$). The follow-up analyses indicate that, in each case, the groups differed significantly from one another in grade 4 but not in grade 5.

Lastly, in the non-inner City schools, there were significant main effects on all the English language and mathematics tests (vocabulary, $F = 4.53$, $p < .05$; reading, $F = 10.02$, $p < .01$; spelling, $F = 4.41$, $p < .05$; capitalization, $F = 8.94$, $p < .01$; punctuation, $F = 6.07$, $p < .05$; usage, $F = 4.61$, $p < .05$; mathematical concepts, $F = 5.58$, $p < .05$; problem solving, $F = 7.99$, $p < .01$; computation, $F = 6.47$, $p < .05$). There was, however, a significant group by year interaction on one of the tests, namely mathematics concepts ($F = 5.07$, $p < .05$). Thus, on all these tests except the concepts test, the performance of the SED_3 group was significantly lower than that of the $NON\text{-}SED_3$ group in both grade 4 and grade 5. Further analyses of the scores of the mathematics concepts test discloses that, here, the two groups had not differed significantly in grade 4, whereas in grade 5, the performance of the SED_3 group was once again sionificantly weaker than that of the $NON\text{-}SED_3$ group.

Schools Under the Lakeshore School Board

The sample sizes for the SED and NON-SED pupils in the four schools of the Lakeshore School Board are shown in Table 33 and the results of the statistical analyses are given in Table 34. Once again, the scores obtained on Raven's Progressive Matrices test were analyzed first. The results of this analysis revealed no significant

difference between the SED pupils and the NON-SED pupils. In consequence, here too, a simple analysis of variance procedure was used in the comparison of all the other test results.

The outcomes of these analyses indicate that the scores of the SED pupils did not differ significantly from those of their NON-SED peers on any of the English and mathematics test. In fact, on most of the tests the numerical values of the means were extremely close to one another (for details, see Table 34). The only test on which the difference in scores approached statistical significance was the vocabulary test (SED, $\bar{x} = 16.42$; NON-SED, $\bar{x} = 18.67$). Similarly, there were practically no differences between the scores of the SED group and those of the NON-SED group on the motivation and self-concept inventories.

On the other hand, the comparison of the grade equivalent scores indicates that the NON-SED pupils performed at a slightly higher level than the SED pupils on all the English language tests. Nevertheless, both groups performed at or above grade level on all of these tests except for word analysis and spelling (SED only) where there was a three to five months lag between the expected level (2.8-2.9) and the levels attained (for the exact means, see Table 34). In mathematics, the two groups performed again at or above grade level and, here, there were practically no differences between the SED and NON-SED pupils.

The Stanine scores on the SCAMIN show that the SED pupils scored one point above the NON-SED pupils on the role expectation measure, whereas the pattern was reversed in the case of the self-adequacy measure (see Table 35). Finally, the two groups obtained the same scores on the two motivation measures (goal and achievement needs and achievement investment). Moreover, both groups ranked within the average range of the stanine scale on all four measures pertaining to the assessment of the affective characteristics.

Summary and Conclusions

A. The results of the grade 2 tests in the P.S.B.G.M. schools can be summarized as follows:

(1) Comparison Between SED_1, SED_2 and SED_3 Groups

When the pupils were grouped according to school profile, the SED_2 group (Inner City schools) scored significantly higher than the SED_1 group (core Inner City schools) on the English usage test and the mathematics concept test. On the latter test, the SED_2 group also scored significantly higher than the SED_3 group (non Inner City schools). In the analysis according to SED concentration, the SED_2 group (55% - 79% SED concentration in the class) did not differ significantly from the SED_3 group (less than 55%

SED concentration in the class) and both groups scored significantly higher than the SED_1 group (80% - 100% SED concentration in the class) on the vocabulary test and on the mathematics concepts test. On the measures of the affective characteristics, there were no significant differences among the three groups when they were grouped according to school profile. However, when they were grouped according to SED concentration, the SED_3 group obtained a significantly higher score on the motivation inventory than the SED_1 group.

(2) Comparison Between SED and NON-SED Groups

In the "by profile" classification, the SED_1 and SED_2 groups scored significantly lower than the corresponding NON-SED groups on two English language tests. the SED_2 group scored significantly lower than the NON-SED_2 group on three English language tests and on the mathematics computation test. In the analysis according to SED concentration, the SED_1 and SED_2 groups differed significantly from the NON-SED_1 and NON-SED_2 groups on only one test (vocabulary in the case of SED_1/NON-SED_1 and computation in the case of SED_2/NON-SED_2). Between the SED_3 and NON-SED_3 groups, there were no significant differences in the "by concentration" grouping. There were also no significant differences between any of the groups in terms of motivation and self-concept.

(3) Grade Equivalent Scores

The NON-SED pupils performed within a two to three months range of the expected grade level except in computation where they scored six to eight months above grade level. The SED pupils' grade equivalent scores ranged from two to ten months below grade level on the English tests. In mathematics, they ranked within a two to three months range of the expected grade level and in computation, they ranked consistently above grade level.

(4) Comparison of 1985 (Grade 1) and 1986 (Grade 2) Results

The comparison between the three SED groups reveals that there were no significant differences among the three SED groups at either grade level except in the case of the mathematics concepts test where the groups differed from one another in grade 2 but not in grade 1. Within each type of school there was very little change from grade 1 to grade 2 in the pattern of significant differences between the SED and NON-SED groups and wherever such changes were noted (word analysis in the case of SED_1 vs. $NON\text{-}SED_1$, reading and usage in the case of SED_2 vs. $NON\text{-}SED_2$, usage in the case of SED_3 vs. $NON\text{-}SED_3$), they all indicated significant differences in grade 1 which disappeared in grade 2.

8. The results of the grade 5 tests can be summarized as follows:

(1) Comparison Between SED_1, SED_2 and SED_3 Groups

The three SED groups did not differ significantly from one another on any of the English language and mathematics tests when grouped according to school profile as well as when grouped according to SED concentration. On the affective characteristics, there were no significant differences according to the "by profile" classification. However, when grouped according to SED concentration, the SED_2 group scored significantly lower than the SED_3 group on the self-concept scale.

(2) Comparison Between SED and NON-SED Groups

In the "by profile" classification, the SED_1 group scored significantly lower than the NON-SED_1 group on three English tests (reading, capitalization and usage) and on two mathematics tests (concepts and computation). The SED_3 group scored significantly lower than the NON-SED_3 group on the following tests: capitalization, punctuation, usage and computation. Between the SED_2 and NON-SED_2 groups there were no significant differences. In the analysis according to SED concentration, there were fewer significant differences than in the "by profile" analysis between the SED_1 and NON-SED_1 groups (mathematics concepts and computation) and again no differences between the SED_2 and NON-SED_2 groups. However, here the differences between the SED_3 and

NON-SED_3 groups were significant on all the English language and mathematics tests except vocabulary. On the motivation and self-concept inventories, there were again no significant differences between any of the groups.

(3) Grade Equivalent Scores

The NON-SED_1 and the NON-SED_3 pupils performed at or above grade level on most of the tests. The three SED groups and the NON-SED_2 group performed three to ten months below grade level except in computation where they scored at or above the expected grade level.

4) Comparison of 1985 (Grade 4) and 1986 (Grade 5) Results

The comparison 1985 - 1986 results shows that the SED_3 group improved its performance significantly in reading and punctuation and no such change was noted for the SED_1 and SED_2 groups. There were no other changes in the relationship between these three groups. The comparison of the SED and NON-SED groups at each grade level shows that the number of significant differences between the SED and NON-SED groups decreased from grade 4 to grade 5 in the core Inner City schools (mathematics concepts and problem solving) and in the Inner City schools (capitalization and problem solving), but increased slightly in the non-Inner City schools (mathematics concepts).

C. The results of the grade 2 tests in the schools of the Lakeshore School Board can be summarized as follows:

There were no significant differences between the SED and NON-SED pupils on any of the tests except for word analysis where the difference between the two groups was marginally significant. In terms of grade equivalents, the SED pupils' performance was approximately two to three months below the level of the NON-SED pupils on all the English tests. There are significant differences between the two groups on any of the measures pertaining to the affective characteristics.

Several findings characterize this year's study. First, there were significant differences among the SED pupils in the three types of schools at the grade 2 level but not at the grade 5 level. Second, in all three types of schools, the SED pupils scored consistently lower than the NON-SED pupils on the tests pertaining to academic achievement, except in the case of the grade 5 pupils in the Inner City schools. Third, on the measures pertaining to the affective characteristics, there were no significant difference, between the SED and NON-SED groups in all three types of schools and at both grade levels. Fourth, by comparison to last year's results, the differences between the SED pupils and their NON-SED peers decreased slightly from

one year to the next, except in the case of the grade 4 to grade 5 comparison in the non-Inner City schools where there was an actual increase of such differences.

The major pattern to emerge from this study is that,in the non-Inner City schools,the development of academic skills in the lower elementary grades differs from that in the upper elementary grades when the SED and NON-SED pupils are compared. In the lower grades, i.e., from grade 1 to grade 2, there is no indication that the gap between the SED and NON-SED pupils in these schools is widening. In contrast, in the upper grades, the SED pupils seem to fall further behind their NON-SED peers as they advance from grade 4 to grade 5. Since the pattern is not the same at both levels, it seems difficult to attribute the development that emerges in the upper grades to the effect of the socio-economically heterogeneous environment. On the other hand, this pattern was not observed in the Inner City schools (core and non-core) where there was actually a narrowing of the gap in academic achievement between the SED and NON-SED pupils. It is possible that increasing differences in the non-Inner City schools emerge only in the upper grades because subject matter becomes conceptually much more difficult from one year to the next at these grade levels and, consequently, it is more difficult to keep up with the academic level of the NON-SED majority here than in the lower grades.

In comparing the performance of pupils across grade levels, it

should be borne in mind that the tests increase in difficulty from one year to the next. Hence, the comparisons of scores across grades are not direct indications of how much knowledge was gained from one year to the next, but rather a year stick to measure how the relationship between the groups changed over the course of the year. It follows that the scores obtained on a test at the end of the second year are not necessarily higher than those of the previous year. In fact, in some instances, the test scores were proportionally lower in grade 2 and 5 than they had been in grades 1 and 4 respectively. This pattern was particularly consistent on the word analysis test administered in the lower grades. Here, all the SED and NON-SED groups scored lower on the grade 2 test than on the corresponding grade 1 test. It is possible that the grade 2 version of this test is relatively more difficult than the grade 1 version. Alternately, the grade 2 language arts curriculum may put less emphasis on word analysis than the grade 1 curriculum.

When the changes that occurred from one grade level to the next are considered more in detail, it becomes apparent that they were not uniform for each subject across the three types of schools. In particular, it is to be noted that, whereas in grade 1 the SED pupils in all three types of schools scored significantly lower than their NON-SED peers in reading, in grade 2 this difference was recorded only in the core Inner City and non-Inner City schools and not in the Inner City

schools. This may be due to the fact that the gap between the SED and NON-SED pupils in the Inner City schools had already been less pronounced in grade 1, even though it was still statistically significant at that stage. Further analysis also shows that the variability in reading ability among the SED pupils was much greater in the core Inner City schools and the non-Inner City schools than in the Inner City schools. Thus progress may have been more steady in the latter type of school.

Interestingly, some of the results pertaining to the grade 1 and grade 2 comparisons are contradictory to those obtained from the analysis that pertains only to the 1986 data. The latter indicates, for instance, that here only the SED pupils in the non-Inner City schools still scored significantly lower than their NON-SED peers on the reading test. This outcome may be attributed to the fact that 20% of the pupils in the grade 2 classes were new pupils whose test scores were excluded from the comparison between the grade 1 and grade 2 results. Their contribution to the class means may not have been even in each type of school.

An interesting finding that emerges from this year's study at the grade 5 level is the relatively weak performance of the NON-SED group in the Inner City schools by comparison to that of the NON-SED groups in the core Inner City and non-Inner City schools. In the latter two types of schools, the NON-SED pupils performed at or above grade level

on most of the tests, whereas the NON-SED pupils in the non-Inner City schools performed markedly below grade level on practically all the tests. In fact, their performance did not differ significantly from that of their SED peers on any of the tests. Indication of this pattern had already emerged, albeit to a lesser degree, in grade 4. Its intensification in grade 5 suggests that in schools where there is a large proportion of SED pupils, both the SED and the NON-SED pupils need additional support systems. If the bulk of the budget for such schools is allotted to the core Inner City schools, the extent of the intervention programs in the other Inner City schools may be too small to raise the performance of the NON-SED pupils to the academic level of their peers in the core Inner City schools.

With respect to the SED concentration factor, no clear-cut pattern emerged. Overall, there were fewer significant differences here than when pupils were grouped according to school profile, except in those grade 5 classes where the SED concentration was below 55%. As already noted, the concentration of SED pupils in the classroom varies for a given pupil from year to year because pupils are often regrouped differently as they move from one grade level to the next. Moreover, the turnover of pupils, which in the case of the P.S.B.G.M. schools is relatively large, may also affect the SED concentration at the classroom level. In consequence, the period of time pupils find themselves within a specific SED concentration environment may be too short in order to have a decisive influence on

the pupils' academic achievement.

In contrast to the findings pertaining to the comparison of the SED and NON-SED pupils in the P.S.B.G.M.'s non-inner City schools, the findings for the schools of the Lakeshore School Board, all of which were non-inner City schools, disclose practically no significant differences between the SED and NON-SED pupils in these schools. Two points should be kept in mind here. First, the number of SED pupils in these schools is very small by comparison to the number of NON-SED pupils, hence, the results of the statistical analysis have to be accepted cautiously. Second, in terms of grade equivalent scores, the SED pupils did score lower than their NON-SED peers on the English language tests. Nevertheless, the fact that the differences on these tests did not reach statistical significance may be an indication that the school environment will only have a positive effect on the academic achievement of SED pupils if their preparation in the classroom is significantly lower than that in the P.S.B.G.M. non-inner City schools.

Finally, the findings pertaining to the affective characteristics suggest that the socio-economical environment has no major effect on the affective characteristics that were evaluated in this research (role expectancy, self-adequacy, achievement needs and achievement investment). Nevertheless, it is of interest to note that the grade 2 pupils in the P.S.B.G.M's non-inner City schools (SED and NON-SED) seem to have slightly lower goal achievement needs than the grade 2

pupils in the schools of the Lakeshore School Board. Since the scores of the pupils in the P.S.B.G.M. schools rank towards the lower limit of the "average" level on the stanine scale, it would be interesting to pursue the development of this motivational factor in order to see whether differences will not become more pronounced here in higher grades.

In conclusion, the findings of this study support the hypothesis formulated at the end of the previous phase of the research, namely, that the effect of the environment in the P.S.B.G.M.'s non-Inner City schools is in itself not powerful enough to raise the academic achievement of the SED pupils in those schools above that of the SED pupils in the Inner City schools. Moreover, whereas there are some indications that the gap between the SED pupils and their NON-SED peers in the non-Inner City schools may decrease slightly across grades in the lower elementary grades, this does not seem to be the case in the upper elementary grades. Further research is, however, needed in order to see whether this pattern is consistent throughout the elementary grades. Similarly, the claim that the environment has a positive effect on the academic achievement of SED pupils, when their proportion in the school is very small, needs to be supported by further research. It is hoped that this evaluation will be continued next year, thus, providing the relevant data for grades 3 and 6. It will then be possible to extend the various comparisons across all the grades of the elementary school.

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Table 1A

Sample Sizes for Grade 2 According to School Profile

Core Inner City Schools	SED_1	51
	$NON\text{-}SED_1$	23
Inner City Schools	SED_2	58
	$NON\text{-}SED_2$	21
Non-Inner City Schools	SED_3	45
	$NON\text{-}SED_3$	48

Table 1B

Sample Sizes for Grade 2 According to SED Concentration

80% - 100% SED	SED_1	63
	NON-SED.	10
55% - 79% SED	SED_2	69
	$NON\text{-}SED_2$	45
Below 55% SED	SED_3	22
	$NON\text{-}SED_3$	37

Table 2

F Ratios for Two-Way Analyses of Grade 2 Test Results According to School Profile

	School Profile	SED/NON-SED	Interaction
English lang. skills			
- vocabulary (30)[a]	0.20	11.89***	1.69
- word analysis (57)	2.33	7.48**	1.48
- reading (67)	0.24	6.78**	0.56
- spelling (29)	3.70*	10.25**	0.27
- usage (23)	4.10*	8.11**	0.67
Mathematics			
- concepts (36)	8.80***	0.73	0.59
- problems (24)	1.95	0.14	0.55
- computation (28)	1.83	6.90*	0.06
SCAMIN			
- motivation (60)	0.25	0.39	0.40
- self-concept (60)	0.06	0.01	0.63

[a] Maximum scores in parentheses

* $p < .05$
** $p < .01$
*** $p < .001$

Table 3

Comparison of Test Results of SED Groups
According to School Profile[a]
Grade 2

	SED_1	SED_2	SED_3	F ratio[b]	df
Non-verbal (36)[c]	23.14	24.26	24.22	____	____
English Lang. Skills					
- vocabulary (30)	11.35	13.76	12.76	____	____
- word analysis (57)	25.81	26.41	24.66	____	____
- reading (67)	34.39	37.19	33.	____	____
- spelling (29)	16.94	19.26	16.76	2.99	2,144
- usage (23)	10.21	12.62	11.75	4.39**	2,144
Mathematics					
- concepts (36)	16.90	20.30	18.09	6.55**	2,143
- problems (24)	12.03	13.74	12.00	3.10	2,143
- computation (28)	20.17	21.21	19.37	1.59	2,138
SCAMIN					
- motivation (60)	48.52	49.26	47.11	____	____
- self-concept (60)	43.83	43.65	44.44	____	____

[a] means joined by a line differ significantly from one another.

[b] "____" indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis.

[c] maximum scores in parentheses

* $p < .05$

** $p < .01$

Table 4

Comparison of Test Results of SED and NON-SED Groups
in Core Inner City Schools According to School Profile
Grade 2

	SED_1	$NON\text{-}SED_1$	F ratio[a,b]	df
Non-verbal (36)[c]	23.14	28.74	4.91***	5,245
English lang. skills				
- vocabulary (30)	11.63	16.72	10.80**	1,67
- word analysis (57)	26.33	26.62	0.02	1,67
- reading (67)	35.14	40.13	2.68	1,70
- spelling (29)	17.44	18.78	0.69	1,69
- usage (23)	10.27	13.40	7.40**	1,69
Mathematics				
- concepts (28)	17.22	17.52	____	____
- problems (24)	12.10	13.88	____	____
- computation (28)	20.32	22.32	2.37	1,62
SCAMIN				
- motivation (60)	48.49	48.23	____	____
- self-concept (60)	44.06	44.22	____	____

[a] "____" indicates that the one-way analysis of variance was not carried out following the absence of significant differences according the factorial analysis

[b] The F ratio and df for the non-verbal test pertain to the one-way analysis for all six SED and NON-SED groups

[c] Maximum scores in parentheses

** $p < .01$

Table 5

Comparison of Test [illegible] of SED and NON-SED Groups
in Inner City Schools [illegible] to School Profile
Grade [illegible]

	SED_2	$NON\text{-}SED_2$	$F^{a,b}$	df
Non-verbal (36)[c]	24.26	25.90	—	—
English lang. skills				
- vocabulary (30)	13.95	15.23	0.77	
- word analysis (57)	26.70	31.53	5.79*	1,--
- reading (67)	37.78	40.12	0.59	1,70
- spelling (29)	19.47	22.27	4.23*	1,72
- usage (230	12.71	13.83	1.12	1,72
Mathematics				
- concepts (36)	20.66	21.09	—	—
- problems (24)	13.95	13.40	—	—
- computation (28)	21.34	22.96	1.46	1,72
SCAMIN				
- motivation (60)	49.29	49.43	—	—
- self-concept (60)	43.75	44.01	—	—

a — " indicates that the one-way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis

b The F ratio and df for the non-verbal test pertain to the one-way analysis for all six SED and NON-SED groups

c Maximum scores in parentheses

* $p < .05$

Table 6

Comparison of Test Results of SED and NON-SED Groups
in Non-Inner City Schools According to School Profile
Grade 2

	SED_3	$NON\text{-}SED_3$	F ratio[a,b]	df
Non-verbal (.60)[c]	24.22	26.08	4.91***	5,245
English lang. skills				
- vocabulary (30)	13.23	15.33	3.40	1,89
- word analysis (57)	25.24	29.05	6.89**	1,87
- reading (67)	34.90	40.91	5.07*	1,83
- spelling (29)	17.15	20.61	6.75*	1,86
- usage (23)	12.10	13.63	2.10	1,86
Mathematics				
- concepts (36)	18.73	20.13	—	—
- problems (24)	12.46	12.49	—	—
- computation (28)	19.61	21.84	3.99*	1,86
SCAMIN				
- motivation (60)	47.15	49.06	—	—
- self-concept (60)	44.47	43.44	—	—

a "—" indicates that the one-way analysis of variance was not carried out following the absence of significance differences according to the factorial analysis

b The F ratio and df for the non-verbal test pertain to the one-way analysis for all six SED and NON-SED groups

c Maximum scores in parentheses

* $p < .05$
** $p < .01$

Table 7

Comparison of Grade Equivalent Scores on CTBS
According to School Profile
Grade 2

	Core Inner City		Inner City		Non Inner City	
	SED_1	$NON\text{-}SED_1$	SED_2	$NON\text{-}SED_2$	SED_3	$NON\text{-}SED_3$
English lang. skills						
- vocabulary	20	29	24	26	22	26
- word analysis	19	21	21	26	18	23
- reading	20	26	23	25	21	26
- spelling	23	28	27	32	23	31
- usage	19	27	25	28	23	27
Mathematics						
- concepts	24	26	28	30	26	29
- problems	25	28	28	28	25	26
- computation	31	36	34	37	32	35

Table 8

Comparison of Stanine Scores on SCAMIN
According to School Profile
Grade 2

	Core Inner City		Inner City		Non Inner City	
	SED_1	$NON\text{-}SED_2$	SED_2	$NON\text{-}SED_2$	SED_3	$NON\text{-}SED_3$
Motivation						
- goal & achievement needs	4	4	5	5	4	4
- achievement	5	5	5	5	5	5
Self-Concept						
- role expectations	5	5	5	5	6	5
- self-adequacy	6	6	6	6	6	6

Table 9

Comparison of Test Results of SED Groups
According to SED Concentration
Grade 2[a]

	SED_1	SED_2	SED_3	F ratio	df
Non-verbal (36)[b]	23.48	23.77	25.36	___	___
English lang. skills					
- vocabulary (30)	10.90	14.06	13.25	6.14**	2,144
- word analysis (57)	24.76	26.42	25.97	0.78	2,144
- reading (67)	32.91	36.53	38.06	2.33	2,140
- spelling (29)	17.00	18.13	18.53	0.82	2,144
- usage (23)	11.13	11.53	12.80	1.18	2,144
Mathematics					
- concepts (36)	17.26	19.39	19.43	3.29*	2,143
- problems (24)	11.83	13.56	12.35	2.91	2,143
- computations (28)	19.53	20.90	20.60	1.11	2,138
SCAMIN					
- motivation (60)	49.21	48.42	45.96	3.17*	2,141
- self-concept (60)	43.95	43.41	45.75	1.52	2,141

[a] Means joined by a line differ significantly from one another

[b] Maximum scores in parentheses

* $p < .05$

** $p < .01$

Table 10

Comparison of Test Results of SED and NON-SED Groups in Core Inner City Schools According to SED Concentration
Grade 2

	SED_1	$NON\text{-}SED_1$	F ratio[a]	df
Non-verbal (36)[b]	23.48	26.10	4.69***	5,245
English lang. skills				
- vocabulary (30)	10.88	14.80	5.28*	1,67
- word analysis (57)	24.75	25.77	0.15	1,65
- reading (67)	32.90	39.20	3.50	1,66
- spelling (29)	16.70	19.11	1.11	1,67
- usage (23)	11.10	12.27	0.75	1,67
Mathematics				
- concepts (36)	17.29	17.90	0.11	1,67
- problems (24)	11.63	13.50	1.00	1,67
- computation (25)	16.57	16.33	0.02	1,67
SCIMCA				
- motivation (60)	46.21	48.39	0.24	1,65
- self-concept (60)	43.98	42.17	0.96	1,65

[a] The F ratio and df for the non-verbal test pertain to the one-way analysis for all six SED and NON-SED groups

[b] Maximum scores in parentheses

* $p < .05$

*** $p < .001$

Table 11

Comparison of Test Results of SED and NON-SED Groups
in Inner City Schools According to SED Concentration

Grade 2

	SED_2	$NON\text{-}SED_2$	F ratio[a]	df
Non-verbal (36)[b]	23.77	25.89	4.69***	5,245
English lang. test				
- vocabulary (30)	14.26	15.19	0.71	1,106
- word analysis (57)	26.60	29.35	3.39	1,105
- reading (57)	37.00	39.54	1.09	1,104
- spelling (29)	16.24	20.55	3.34	1,105
- usage (23)	11.36	13.30	3.89	1,105
Mathematics				
- concepts (36)	19.62	19.37	0.33	1,105
- problems (29)	13.75	13.78	0.55	1,105
- computation (28)	20.94	23.33	4.27*	1,106
SCAMIN				
- motivation (60)	48.40	48.97	0.47	1,108
- self-concept (60)	43.49	43.84	0.32	1,108

[a] The F ratio and df for the non-verbal test pertain to the one-way analysis for all six SED and NON-SED groups.

[b] Maximum scores in parentheses

* $p < .05$

*** $p < .001$

Table 12

Comparison of Test Results of SED and NON-SED Groups in Non-Inner City Schools According to SED Concentration Grade 2

	SED_3	$NON\text{-}SED_3$	F ratio[a]	df
Non-Verbal (36)[b]	25.36	27.87	4.69***	5,245
English lang. skills				
- vocabulary (30)	14.36	16.62	2.19	1,56
- word analysis (52)	27.57	30.17	1.60	1,56
- reading (67)	40.54	42.91	0.48	1,53
- spelling (29)	19.62	21.57	1.84	1,55
- usage (23)	13.65	14.23	0.25	1,59
Mathematics				
- concepts (36)	30.88	33.29	1.04	1,56
- problems (29)	23.38	25.02	1.26	1,56
- computation (28)	21.14	22.57	0.92	1,54
SCAMIN				
- motivation (60)	46.33	49.33	3.33	1,57
- self-concept (60)	45.83	44.39	0.81	1,53

[a] The F ratio and df for the non-verbal test pertain to the one-way analysis for all six SED and NON-SED GROUPS

[b] Maximum scores in parentheses

*** $p<.001$

Table 13

Comparison of Grade Equivalent Scores on CTBS
According to SED Concentration
Grade 2

	80% - 100% SED		55% - 79% SED		Less than 55% SED	
	SED_1	$NON\text{-}SED_1$	SED_2	$NON\text{-}SED_2$	SED_3	$NON\text{-}SED_3$
English lang. skills						
- vocabulary	20	26	24	25	24	29
- word analysis	19	20	20	23	20	25
- reading	20	24	22	25	24	27
- spelling	23	27	25	29	26	33
- usage	21	24	22	25	26	30
Mathematics						
- concepts	24	27	27	27	28	31
- problems	24	28	27	27	27	27
- computation	31	31	33	36	33	36

Table 14

Comparison of Stanine Scores on SCAMIN
According to SED Concentration
Grade 2

	80% - 100% SED		55% - 79% SED		Less than 55%	
	SED_1	$NON\text{-}SED_1$	SED_2	$NON\text{-}SED_2$	SED_3	$NON\text{-}SED_3$
Motivation						
- goal & achievement needs	4	4	5	4	4	5
- achievement	5	5	5	5	5	5
Self-concept						
- role expectations	5	5	5	5	6	5
- self-adequacy	6	5	5	6	6	6

Table 15A

Sample Sizes for Grade 5 According to School Profile

Core Inner City Schools	SED_1	48
	$NON\text{-}SED_1$	22
Inner City Schools	SED_2	54
	$NON\text{-}SED_2$	36
Non-Inner City Schools	SED_3	33
	$NON\text{-}SED_3$	61

Table 15B

Sample sizes for Grade 5 According to SED Concentration

80% - 100% SED	SED_1	49
	$NON\text{-}SED_1$	7
55% - 79% SED	SED_2	23
	$NON\text{-}SED_2$	15
Below 55% SED	SED_3	63
	$NON\text{-}SED_3$	97

Table 16

F Ratios for Two-Way Analyses of Grade 5
Test Results According to School Profile

	School Profile	SED/NON-SED	Interaction
English lang. skills			
- vocabulary (39)[a]	2.07	7.33**	3.72
- reading (54)	3.01*	4.44*	2.42
- spelling (40)	4.15*	8.39**	0.21
- capitalization (30)	4.07	15.10***	3.14*
- punctation (30)	3.04*	11.87***	0.97
- usage (30)	3.51*	8.96**	2.65
Mathematics			
- concepts (37)	1.59	8.74**	2.99
- problems (27)	0.20	6.51*	0.74
- computation (45)	5.13**	10.59***	0.80
SCAMIN			
- motivation (120)	1.45	1.27	0.37
- self-concept (120)	0.25	0.52	1.97

[a] Maximum scores in parentheses

* $p < .05$
** $p < .01$
*** $p < .001$

Table 17

Comparison of Test Results of SED Groups

According to School Profile

Grade 5

	SED_1	SED_2	SED_3	F ratio[a]	df
Non-verbal (48)[b]	34.36	36.45	35.50	____	____
English lang. skills				____	____
- vocabulary (39)	21.07	21.39	22.61	1.09	2,126
- reading (54)	24.49	25.76	27.55	1.03	2,123
- spelling (40)	24.59	23.20	26.07	1.62	2,123
- capitalization (30)	14.80	16.33	16.06	0.58	2,123
- punctuation (30)	13.42	14.00	14.93	2.06	2,123
- usage (30)	14.09	16.23	16.24		
Mathematics				____	____
- concepts (37)	18.10	20.22	19.42	____	____
- problems (27)	13.94	15.07	14.61	2.48	2,122
- computation (45)	27.46	27.90	31.13		
SCAMIN				____	____
- motivation (120)	97.86	96.29	94.64	____	____
- self-concept (120)	82.61	79.31	82.82		

[a] "____" indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis

[b] Maximum scores in parentheses

Table 18

Comparison of Test Results of SED and NON-SED Groups
in Core Inner City Schools According to School Profile

Grade 5

	SED[1]	NON-SED[1]	F ratio[a]	df
Non-verbal (48)[b]	34.36	36.71	———	———
English lang. skills				
- vocabulary (39)	21.37	24.63	2.72	1,63
- reading (54)	24.49	30.22	5.52*	1,61
- spelling (40)	24.59	27.06	0.90	1,60
- capitalization (30)	14.80	18.77	7.08**	1,60
- punctuation (30)	13.42	16.18	2.66	1,60
- usage (30)	14.09	17.35	4.20*	1,60
Mathematics				
- concepts (37)	18.10	21.89	4.45*	1,62
- problems (27)	13.94	16.56	3.92	1,62
- computation (45)	27.42	31.96	4.54*	1,62
SCAMIN				
- motivation (120)	97.86	99.39	———	———
- self-concept (120)	82.61	85.50	———	———

a "———" indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis

bMaximum scores in parentheses

*$p < .05$
**$p < .01$

Table 19

Comparison of Test Results of SED and NON-SED Groups
in Inner City Schools According to School Profile

Grade 5

	SED_2	$NON\text{-}SED_2$	F ratio[a]	df
Non-Verbal (48)[b]	36.45	34.47	___	___
English lang. skills				
- vocabulary (39)	21.39	21.91	0.10	1,80
- reading (54)	25.76	24.50	0.53	1,87
- spelling (40)	23.20	24.64	0.58	1,83
- capitalization (30)	16.33	16.09	0.04	1,83
- punctuation (30)	14.00	14.52	0.16	1,83
- usage (30)	16.23	15.49	0.35	1,83
Mathematics				
- concepts (37	20.22	19.47	0.25	1,88
- problems (27)	15.07	15.61	0.32	1,88
- computation (45)	27.90	28.94	0.42	1,80
SCAMIN				
- motivation (120)	96.29	97.21	___	___
- self-concept (120)	79.31	80.61	___	___

a " ___ " indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis

b Maximum scores in parentheses

Table 20

Comparison of Test Results of SED and NON-SED Groups
in Non-Inner City Schools According to School Profile
Grade 5

	SED_3	$NON\text{-}SED_3$	F ratio[a]	df
Non-verbal (48)[b]	35.50	35.53	___	___
English lang. skills				
- vocabulary (39)	22.61	25.73	3.10	1,89
- reading (54)	27.55	30.35	1.44	1,86
- spelling (40)	26.37	29.03	3.57	1,87
- capitalization (30)	16.86	19.73	7.20**	1,87
- punctuation (30)	14.93	17.87	4.62*	1,87
- usage (30)	16.24	19.00	4.54*	1,87
Mathematics				
- concepts (37)	19.42	22.84	6.20*	1,90
- problems (27)	14.61	16.28	2.40	1,90
- computation (45)	31.13	33.37	1.54	1,89
SCAMIN				
- motivation (120)	94.64	97.48	___	___
- self-concept (120)	82.82	79.67	___	___

a "___" indicates that the one way analysis of variance was not carried out following the absence of significant differences according to the factorial analysis

b Maximum scores in parentheses

*$p < .05$
**$p < .01$

Table 21

Comparison of Grade Equivalent Scores on CTBS
According to School Profile
Grade 5

	Core Inner City		Inner City		Non-Inner City	
	SED_1	$NON\text{-}SED_1$	SED_2	$NON\text{-}SED_2$	SED_3	$NON\text{-}SED_3$
English lang. skills						
- vocabulary	49	53	49	50	51	56
- reading	49	56	51	49	53	56
- spelling	53	58	50	52	55	60
- capitalization	46	57	50	49	51	59
- punctuation	51	58	52	54	55	61
- usage	44	51	48	47	49	54
Mathematics						
- concept	52	58	55	54	54	60
- problems	51	56	53	54	52	55
- computation	57	63	58	59	60	64

Table 22

Comparison of Stanine Scores on SCANIN
According to School Profile
Grade 5

	Core Inner City		Inner City		Non-Inner City	
	SED_1	$NON\text{-}SED_1$	SED_2	$NON\text{-}SED_2$	SED_3	$NON\text{-}SED_3$
Motivation						
- goal & achievement needs	6	5	5	5	5	5
- achievement investment	6	7	6	6	5	6
Self-concept						
- role expectations	5	5	4	4	5	4
- self-adequacy	5	5	4	5	5	4

Table 23

Comparison of Test Results of SEI Groups
According to SED Concentration[a]
Grade 5

	SED_1	SED_2	SED_3	F ratio	df
Non-verbal (48)[b]	35.00	35.25	35.95	___	___
English lang. skills					
- vocabulary (39)	22.91	21.76	20.48	1.12	1,122
- reading (54)	26.44	23.91	25.90	0.44	1,126
- spelling (40)	25.28	22.23	24.38	0.87	1,123
- capitalization (30)	15.79	16.14	15.91	0.32	1,123
- punctuation (30)	14.26	13.57	13.97	0.10	1,123
- usage (30)	15.96	16.19	14.81	0.72	1,123
Mathematics					
- concepts (37)	19.02	20.13	19.18	0.20	1,128
- problems (27)	14.98	15.50	13.87	1.15	1,128
- computation (45)	30.07	26.83	28.17	1.78	1,122
SCAMIN					
- motivation (120)	97.77	93.44	96.43	1.57	1,123
- self-concept (120)	80.44	76.70	83.95	4.21*	1,123

[a] Means joined by a line differ significantly from one another

[b] Maximum scores in parentheses

* $p < .05$

Table 24

Comparison of Test Results of SED and NON-SED Groups in Core Inner City Schools According to SED Concentration
Grade 5

	SED_1	$NON\text{-}SED_1$	F ratio	df
Non-verbal (48)[a]	35.00	39.14	—	—
English lang. skills				
- vocabulary (39)	22.91	24.86	0.33	1,49
- reading (54)	26.44	29.57	0.79	1,53
- spelling (40)	25.28	29.33	1.15	1,51
- capitalization (30)	15.79	19.83	3.03	1,51
- punctuation (30)	14.26	18.00	1.88	1,51
- usage (30)	15.96	20.17	3.89	1,51
Mathematics				
- concepts (37)	19.02	26.00	6.35*	1,53
- problems (27)	14.98	17.29	1.21	1,53
- computation (45)	30.07	36.86	28.41***	1,49
SCAMIN				
- motivation (120)	97.77	102.50	1.88	1,50
- self-concept (60)	80.44	82.83	0.48	1,50

[a] Maximum scores in parentheses

* $p < .05$
*** $p < .001$

Table 25

Comparison of Test Results of SED and NON-SED Groups in Inner City Schools According to SED Concentration
Grade 5

	SED_2	$NON\text{-}SED_2$	F ratio	df
Non-verbal (48)[4]	35.25	34.47	___	___
English lang. skills				
- vocabulary (39)	21.76	22.73	0.20	1,36
- reading (54)	23.91	26.14	0.41	1,34
- spelling (40)	22.23	25.64	1.42	1,33
- capitalization (30)	16.14	16.07	0.02	1,33
- punctuation (30)	13.57	14.93	0.55	1,33
- usage (30)	16.19	14.86	0.31	1,33
Mathematics				
- concepts (37)	20.13	19.53	0.05	1,36
- problems (27)	15.50	15.40	0.01	1,36
- computation (45)	26.83	29.47	1.46	1,36
SCAMIN				
- motivation (120)	93.44	95.77	0.23	1,33
- self-concept (60)	76.70	79.39	0.30	1,33

4 Maximum scores in parentheses

Table 26

Comparison of Test Results of SED and NON-SED Groups in Non-Inner City Schools According to SED Concentration Grade 5

	SED_3	$NON\text{-}SED_3$	F ratio	df
Non-verbal (48)[A]	35.95	35.54	———	———
English lang. skills				
- vocabulary (39)	20.48	24.64	9.00**	1,147
- reading (54)	25.90	28.70	2.60	1,147
- spelling (40)	24.38	27.56	5.66*	1,146
- capitalization (30)	15.91	18.78	10.43**	1,146
- punctuation (30)	13.97	16.77	7.51**	1,146
- usage (30)	14.81	17.97	10.70***	1,146
Mathematics				
- concepts (37)	19.18	21.65	5.52*	1,151
- problems (27)	13.87	16.14	8.07**	1,151
- computation (45)	28.17	31.80	7.76**	1,147
SCAMIN				
- motivation (120)	96.43	97.68	0.90	1,146
- self-concept (60)	83.95	80.98	3.57	1,146

[A] Maximum scores in parentheses

* $p < .05$
** $p < .01$
*** $p < .001$

Table 27

Comparison of Grade Equivalent Scores on CTBS
According to SED Concentration
Grade 5

	80% - 100% SED		55% - 79% SED		Less than 55% SED	
	SED_1	$NON\text{-}SED_1$	SED_2	$NON\text{-}SED_2$	SED_3	$NON\text{-}SED_3$
English lang. skills						
- vocabulary	51	54	49	51	48	54
- reading	51	55	48	51	51	54
- spelling	53	61	49	52	52	57
- capitalization	49	59	49	50	49	56
- punctuation	54	62	49	55	52	59
- usage	48	57	49	46	45	52
Mathematics						
- concepts	53	65	55	54	54	58
- problems	53	57	54	53	51	55
- computation	60	69	55	59	57	62

Table 28

Comparison of Stanine Scores on SCAMIN
According to SED Concentration
Grade 5

	80% - 100% SED		55% - 79% SED		Less than 55% SED	
	SED_1	$NON\text{-}SED_1$	SED_2	$NON\text{-}SED_2$	SED_3	$NON\text{-}SED_3$
Motivation						
- goal & achievement needs	5	6	4	5	5	5
- achievement investment	6	7	5	5	5	6
Self-Concept						
- role expectations	4	5	4	4	5	4
- self-adequacy	4	5	4	3	5	5

Table 29

Sample Sizes for the Compari[illegible]
Test Results from 1985 a[illegible]

Grades 1 & 2

Core Inner City Schools	SED_1	37
	$NON\text{-}SED_1$	20
Inner City Schools	SED_2	41
	$NON\text{-}SED_2$	17
Non-Inner City Schools	SED_3	41
	$NON\text{-}SED_3$	38

Grades 4 & 5

Core Inner City Schools	[illegible]	[illegible]
	[illegible]	[illegible]
Inner City Schools	[illegible]	[illegible]
	[illegible]	[illegible]
Non-Inner City Schools	[illegible]	[illegible]
	[illegible]	[illegible]

TABLE IV

[illegible]*

[illegible]

	[illegible]				INNER CITY				NON-INNER CITY			
	[illegible]		[illegible]		SES_2		Non-SES_2		SES_3		Non-SES_3	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	54	55	64	59	64	57	71	69
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	65	67	69	66	61	51	55	63
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	58	60	63	63	52	64	72	74
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	49	51	58	58	60	56	69	67
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	52	65	56	63	61	66	58	65
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	50	54	58	62	50	54	59	58
[illegible]												
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	54	55	61	55	52	51	58	58
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	49	56	61	59	61	52	69	65
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	71	65	74	66	64	68	78	80
[illegible]												
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	61	65	65	62	62	59	61	65
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	67	69	72	68	70	69	68	69

* [illegible]

Table 32

Sample Sizes for the Grade 2 Classes[a]
in the Four Schools of the Lakeshore School Board

SED	27
NON-SED	186

[a] A total of 5 classes were included in the study.

Table 33

Comparison of SED and NON-SED Groups
in the Four Schools of the Lakeshore School Board

	SED	NON-SED	F ratio	df
Non-verbal (36) [A]	26.81	26.33	0.359	1,189
English lang. skills				
- vocabulary (30)	16.42	18.67	3.60	1,199
- word analysis (57)	30.00	27.21	1.66	1,202
- reading (67)	47.24	49.51	0.99	1,193
- spelling (29)	19.00	20.22	0.98	1,202
- usage (23)	15.27	15.60	0.15	1,201
Mathematics				
- concepts (36)	20.42	20.66	0.05	1,199
- problems (24)	15.50	15.44	0.06	1,202
- computation (28)	22.19	21.90	0.11	1,199
SCAMIN				
- motivation (60)	50.41	49.52	1.02	1,205
- self-concept (60)	44.59	44.21	0.12	1,205

[A] Maximum scores in parentheses

Table 34

Comparison of Grade Equivalent Scores on CTBS
in the Four Schools of the Lakeshore School Board

	SED	NON-SED
English lang. skills		
- vocabulary	28	31
- word analysis	24	26
- reading	30	32
- spelling	26	29
- usage	32	33
Mathematics		
- concepts	28	28
- problems	32	31
- computation	34	35

Table 35

Comparison of Stanine Scores on SCAMIN
in the Four Schools of the Lakeshore School Board

	Non-Inner City	
	SED	NON-SED
Motivation		
- goal & achievement needs	5	5
- achievement investment	5	5
Self-concept		
- role expectations	6	5
- self-adequacy	5	6

Appendix I

Explanation of Analysis of Covariance

Analysis of covariance is a statistical procedure which is similar to the analysis of variance in that it is used to compare the results of two or more groups on a particular test. At the same time, analysis of covariance mathematically reduces the influence that another variable, such as I.Q., might have on the test results. For example, if two hypothetical language groups under investigation differ a great deal in terms of I.Q., and if it is believed that I.Q. will significantly influence performance on the test being administered (e.g., a reading test), then an analysis of covariance will estimate the significance of the language factor. This mathematical procedure is used when it is difficult or impossible to select groups which are equivalent in I.Q.

Appendix II

Explanation of Grade Equivalents

The grade equivalent of a given raw score on any test indicates the grade level at which the typical pupil makes this raw score. In each score, the first digit represents the grade and the second digit the month within the grade in which the typical pupil makes the corresponding raw score. Correctly considered, the second digit represents tenths of a year's difference between grade medians for successive years. For example, if a pupil makes a grade equivalent of 5.7, this means that the raw score on the test is the same as that made by the typical or median pupil in grade five at the end of the seventh month.

The grade equivalent of an entire group is a mean based on the individual grade equivalents of all the students in that group.

Appendix III

Interpretation of Stanine Scores

Stanine

The stanine scale is a single nine-point scale of standard scores. (The word stanine was derived from standard nine-point scale). In this scale, raw scores are converted to scores which range from 1 (low) to 9 (high) with a mean of 5 and a standard deviation of 2.

Figure 1. Percentage of Cases at Each Stanine Level.

Meaning of Stanines
in Standard Score

Nine Step Scale